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IS 1448-85 (1976): Methods of test for petroleum and its products, Part 85: Oil separation on 1 storage of greases [PCD 1: Methods of Measurement and Test for Petroleum, Petroleum Products and Lubricants]

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IS : 1448 [P : 85] - 1976
Adopted : 5 July 1976

REAFFIRMED
2003

Indian Standard

METHODS OF TEST FOR PETROLEUM AND ITS PRODUCTS

[P : 85]

OIL SEPARATION ON STORAGE OF GREASES

(First Reprint APRIL 1988)
UDC 665·622:621·892

Adapted, with permission, from the Institute of Petroleum, UK, Standard No. IP 121/75

1. SCOPE

1.1 This method measures the oil which separates from a lubricating grease under the test conditions. It has been shown to provide a useful guide to their behaviour on storage in cans or drums.

1.2 The method is not applicable to those very soft greases which are found to pass bodily through the gauze into the cup during the test.

2. SUMMARY OF METHOD

2.1 A cylindrical column of grease resting on a metal gauze cone is subjected to a fixed pressure in excess of the hydrostatic pressure of the grease. The quantity of oil separated through the gauze after standing for 42 hours or 168 hours at 40°C is taken as a measure of the stability of the grease towards oil separation during storage.

3. APPARATUS

3.1 Assembly of the Apparatus — as shown in Fig. 1, consisting of the parts given in **3.1.1** to **3.1.3**.

3.1.1 *Separation Cup* — a metal cylinder having a cone of aperture 63 micron, wire diameter 40 micron, stainless steel woven wire cloth, soldered to the bottom and made with minimum lapped joint.

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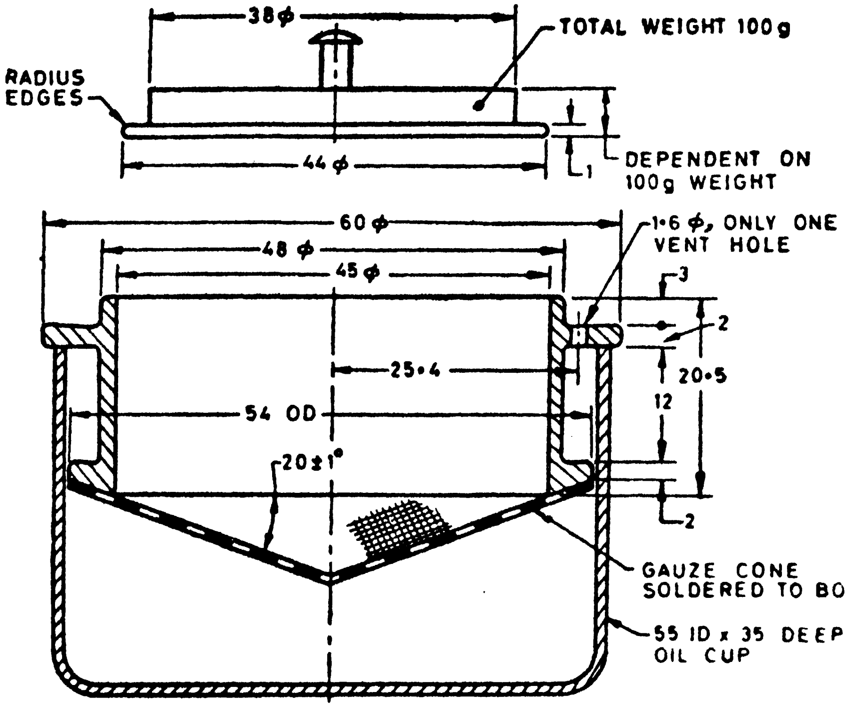
BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

November 1976



NOTE — Tolerance on all dimensions shall be ±0·25 mm.

All dimensions in millimetres.

FIG. 1 ASSEMBLY OF THE SEPARATION APPARATUS

3.1.2 *Metal Weight* — of 100 ± 0·1 g, made of stainless steel or other corrosion resistant metals, to supply the added pressure.

3.1.3 *Oil Cup* — of metal or glass, of diameter and depth to support the separation cup so that the apex of the gauze cone is at all times above the oil that is collected (*see* Note).

NOTE — The standard shallow bitumen penetration container, 55 mm in diameter and 35 mm in depth may conveniently be used for the oil cup.

4. PROCEDURE

4.1 Make the determination in triplicate.

4.2 Weigh the empty separation cup. With the minimum of working, fill the cup with sample, taking care to avoid the formation of air pockets. If possible, force a small portion of the sample through the gauze. Smooth off the top surface with a spatula so that it is flush with

AMENDMENT NO. 1 NOVEMBER 1993
TO
I S 1448 [P: 85] : 1976 METHODS OF TEST FOR PETROLEUM AND ITS PRODUCTS

OIL SEPARATION ON STORAGE OF GREASE

(*Page* 1, *clause* 1.2) — Add the following after 1.2:

'1.3 This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.'

(*Page* 1, *clause* 2.1) — Add the following clause after 2.1 and redesignate the subsequent clauses:

'3. SIGNIFICANCE AND USE

This method has been found to correlate with the oil separation that occurs in pails of grease during storage. It is not intended to predict the oil separation tendencies of grease under dynamic service conditions.'

(PCD 01)

Reprography Unit, BIS, New Delhi, India

the top of the cylinder and wipe off with a finger any grease extruding through the gauze. Weigh the filled separation cup to the nearest mg.

4.3 Weigh the empty oil cup to the nearest mg. Place the filled separation cup on the oil cup, set the 100-g weight centrally on the top of the sample and place the assembled apparatus in a chamber maintained at 40 ± 1°C for 42 or 168 hours as desired.

4.4 At the end of the test period, remove the separation cup, and if a drop of oil hangs at the apex of the gauze cone, discharge it into the oil cup. Weigh the oil cup to the nearest mg and any separated oil that it may contain.

5. CALCULATION AND REPORTING

5.1 Calculate the amount of oil separated, by means of the following equation:

$$\text{Separated oil, percent by mass} = 100\, m/M$$

where

m = mass in mg of separated oil, and

M = mass in mg of the sample taken for the test.

5.2 Calculate the geometric mean of the three determinations to the nearest 0·1 percent and report the result as oil separation at 40°C and 42 or 168 hours.

6. PRECISION

6.1 Results of duplicate tests shall not differ by more than the following amounts:

Test Temperature °C	*Test Duration* hours	*Repeatability* percent by mass	*Reproducibility* percent by mass
40	42	0·7	1·6
40	168	1·0	3·2

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